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News Release

FOR ACTS EXPERIMENTS—ALL GOOD THINGS MUST COME TO AN END

After 81 months of operations and far exceeding its planned 24-month mission, NASA's Advanced Communications Technology Satellite (ACTS) will conclude its extensive experiments program tomorrow, May 31.

Launched in September 1993 as a partnership among NASA, industry and academia, ACTS opened the door for U.S. satellite communications technology in demonstrating the use of the high frequency Ka-band (30/20 GHz). Until ACTS, this frequency was virtually unused—the majority of communication satellites used lower frequency bands called C- and Ku-bands. Exploring Ka-band technology was designed to relieve orbital crowding and demonstrate the first band of frequency wide enough to carry simultaneous services ranging from multiple voice, video and data communications to computer connections at optical fiber data rates.

“The ACTS Experiments Program has been an outstanding research and development achievement that resulted in a unique operational capability for the Center and the Agency,” said Donald J. Campbell, NASA Glenn Research Center Director. “It was a bold step to put a new communication satellite into operation with minimal support, and based on program results, it was the right decision because it laid the foundation for advancements in communication satellites.”

Throughout its impressive lifespan, ACTS, which is managed by the NASA Glenn Research Center, Cleveland, OH, opened new frontiers by utilizing a unique hopping spot beam antenna system that generated 51 tightly focused signal beams. Each spot beam typically had a diameter of 150-200 miles and was able to “hop” from one location to the next, covering up to 40 locations in a millisecond. Concentrating satellite power in such a way permitted significantly smaller and less expensive Earth stations. In addition, the spot beam was better able to penetrate through rain and mitigate rain fade.

"The ACTS Experiments Program had the foresight to step beyond the conventional thinking and prove the technology needed for the future, as well as the present," said Joseph H. Rothenberg, NASA Associate Administrator for Space Flight.

The ACTS Experiments Program has achieved remarkable milestones with 103 experiments and numerous demonstrations involving over 200 diverse partners, paving the way for the next generation of communications satellites. The experiments program succeeded in areas as diverse as advanced networking, medicine, education, defense, emergency response, maritime and aeronautical mobile communications, and science and astronomy. Examples include:

- Telemedicine—ACTS transmitted data-intensive imagery that linked urban medical specialists to under-served areas of the U.S.
- Electric utility companies—ACTS controlled power grids by using ultra-small terminals to poll the grid in remote areas, demonstrating potential cost saving.
- Distance learning—ACTS improved high-quality interactive video and audio for delivery of advanced degree, continuing and remedial training to people in remote locations.
- Business—ACTS utilized its high-speed links with major computers to integrate design teams that used remote research equipment to explore natural resources. This process increases the possibility of saving millions of dollars in annual cost.
- Personal and airborne mobile communication services—ACTS demonstrated technologies such as enabling advanced passenger services onboard the U.S. commercial airline fleet.

"The timeliness of ACTS technologies could not have been better," said Robert A. Bauer, ACTS Project Manager. "Had they arrived too early, few would have been ready to utilize the bandwidth being offered. Had they arrived too late, fiber may have completely shadowed the satellites' consideration in offering wideband services to diverse and remote locations."

ACTS set the standard for next generation communications satellites. Its pioneering advanced technologies for space communications have shown the feasibility of the next generation communication satellites to meet ever-growing communications needs.

Its successes have been recognized through numerous awards including induction into the U.S. Space Foundation's Space Technology Hall of Fame in 1997, an R&D 100 Award in Significant Technology in 1995 and the prestigious Federal Technology Leadership Award in 1995.

For more information on the ACTS Program, please visit:

<http://acts.grc.nasa.gov>

For more information on the Glenn Space Communications Program, please visit:

<http://spacecom.grc.nasa.gov>